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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/897,955	07/05/2001	Hideo Kawano	210639US2	9828
22850	7590	05/04/2005	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			QI, ZHI QIANG	
			ART UNIT	PAPER NUMBER
			2871	

DATE MAILED: 05/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/897,955

**Applicant(s)**

KAWANO ET AL.

**Examiner**

Mike Qi

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) 9-11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 5 is/are rejected.
- 7) ☒ Claim(s) 2-4 and 6-8 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election with traverse of Mar.7, 2005 in the reply is acknowledged.

The traversal is on the ground(s) that a search and examination of the entire application would not place a serious burden on the Examiner. This is not found persuasive because the claims containing different species as using tandem repair circuit pattern for repairing and using island metal pattern for repairing, and that would need further different searches and a serious burden exists.

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 9-11 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected claims, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on Mar.7, 2005.

### ***Claim Objections***

3. Claims 3, 4 and 8 are objected to because of the following informalities:

The claims 3 described that the thick-width wiring portion in claim 1. However, the thick-width wiring portion is not described in claim 1 (there is insufficient antecedent basis), but it is indicated in claim 2. Therefore, the claim 3 should be dependent on claim 2.

The claim 4 described that the size of the thick-width wiring portion in claim 1. However, the size of the thick-width wiring portion is not described in claim 1 (there is

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insufficient antecedent basis), but it is indicated in claim 3. Therefore, the claim 4 should be dependent on claim 3.

The claim 8 described that the pixel electrode and the storage-capacity-forming extended portions disposed above the first and second layer metal pattern in claim 1. However, the first-layer metal pattern and the second-layer metal pattern are not described in claim 1 (there is insufficient antecedent basis), but they are indicated in claim 6. Therefore, the claim 8 should be dependent on the claim 6.

Appropriate correction is required.

For examination purpose, it is interpreted as the claim 3 is dependent on the claim 2, the claim 4 is dependent on the claim 3 and the claim 8 is dependent on the claim 6.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant admitted prior art (AAPA) in view of US 5,517,341 (Kim et al).

Claim 1, AAPA (paragraphs 0004-0021; Fig.6) that a matrix array substrate comprising:

- scanning lines (11) arranged substantially in parallel;

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- signal lines (vertical) arranged substantially perpendicular to the scanning lines (11);
- pixel electrodes (5) each being arranged on a respective pitch in a matrix formed by the scanning lines and the signal lines (scanning line and signal line define the pixel region);
- each switching element (TFT) (9) being disposed at around inter section of one of the scanning lines (11) and one of the signal lines (vertical signal lines) and inputting signal to respective one of the pixel electrodes (5) from the one of the signal lines in accordance with electric current on the one of the scanning lines (11);
- a storage-capacity-forming extended portion (51-1) being extended from first of the pixel electrode (5-1) towards second of the pixel electrodes (5-2), the first pixel electrode (5-1) being interposed between first and second ones of the scanning lines (11-1 and 11-2), the second pixel electrode (5-2) being supplied with a signal in accordance with an applied current on the second scanning line (11-2), and the storage-capacity-forming extended portion (51-1) overlapping the second scanning line (5-2) with an insulator film therebetween (forming capacitor must having an insulator between two conductive electrodes);
- a tandem repair circuit (6) , and the tandem repair comprised of:
- first connector electrode (35) being connected with the storage-capacity-forming extended portion (51-1) extended from the first pixel electrode (5-1);

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- second connector electrode (36) being distanced from the first connector electrode (35) and connected with the second pixel electrode (5-2);
- third connector electrode (13) disposed as bridging over the first connector electrode (35) to the second connector electrode (36);
- using contact hole to connect the first connector electrode (35) to the storage-capacity-forming extended portion (51-1) (pixel extended portion).

AAPA does not explicitly disclose that the contact hole being placed within contours of the second scanning line, and the contact hole passing through an insulator film for connecting the first connector electrode to the storage-capacity-forming extended portion.

However, Kim discloses (col.4, line 47-65; Fig.5) that using electrode (10) as an electrode of storage capacitor associated with a pixel electrode (4), and in order to increase aperture ratio and contrast ratio of LCD, the electrode (10) of the storage capacitors substantially surround their associated pixel electrode (4) and, preferably, overlap only a peripheral edge portion thereof, and the storage capacitor electrode (10) overlap edge portion of the gate line (1) as shown in Fig.1. That would be the same principle as using the storage-capacity-forming extended portion (51-1) of this application overlapping the scanning line such as the second scanning line (11-2), so as to increase the aperture ratio and contrast ratio. Because the storage-capacity-forming extended portion (51-1) only cover the second scanning line (11-2) (do not extend outside of the scanning line), so that the contact hole for connecting the first connector electrode (35) to the storage-capacity-forming extended portion (51-1) must pass

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though an insulator film (forming capacitor must have an insulator film between two conductive electrodes) and the contact hole must be placed within contours of the second scanning lines.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to arrange the contact hole being placed within contours of the second scanning line, and the contact hole passing through an insulator film for connecting the first connector electrode to the storage-capacity-forming extended portion as claimed in claim 1 for increasing the aperture ratio and contrast ratio of LCD.

Claim 5, AAPA discloses (Fig.6) that the TFT (9) (switching element) being comprised of gate electrode, drain electrode and source electrode, and the second connector electrode (36) being formed of a portion extended from the source electrode, and using contact hole (as shown in Fig.6) for connecting the source electrode with the first pixel electrode (5-1) passing through the insulator film (the pixel electrode for displaying image signal, and the source electrode as a part of the TFT for driving the liquid crystal, and the two electrodes must having an insulator therebetween to perform the different functions, so that the contact hole must passing through the insulator film between the pixel electrode and the source electrode). Forming the gate electrode with the gate line or a portion of the gate line that would simplify the making process, because the gate electrode is connected to the gate line, and that would have been at least obvious. Forming the drain electrode with the signal line or a portion of the signal line that would simplify the making process, because the drain electrode is connected to the signal line, and that would have been at least obvious.

***Allowable Subject Matter***

6. Claims 2-4 and 6-8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record neither discloses nor teaches that a tandem repair pattern for a matrix array substrate in a liquid crystal display comprising various elements as claimed, more specifically, as the following;

the first connector electrode being comprised of a thin-width wiring portion extending from an area above the third connector electrode (bridged connector electrode) to an area above a scanning line and substantially crossing a contour of the scanning line; and a thick-width portion being connected with an end of the thin-width wiring portion and located within contours of the scanning lines as shown in Figs.1-2 [claim 2];

the third connector electrode (bridged connector electrode) being included in a first-layer metal pattern and formed simultaneously with the scanning lines, and the first and second connector electrodes being included in a second-layer metal pattern and formed simultaneously with the signal lines as shown in Fig.3 [claim 6].

The closest prior art AAPA and US 5,517,341 (Kim et al) discloses a tandem repair pattern for the pixel electrode defects using first, second and third connector



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electrode, and using pixel overlapping gate line to form storage capacitor. However, the prior art of record do not disclose such tandem repair pattern in which the first connector electrode having thin-width portion and thick-width portion as claimed in claim 2; and the third connector electrode (bridged connector electrode) being included and simultaneously formed with scanning lines and the first and second connector electrode being included and simultaneously formed with signal lines as claimed in claim 6.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Qi whose telephone number is (571) 272-2299.

The examiner can normally be reached on M-T 8:00 am-5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Mike Qi  
Patent Examiner  
Apr. 21, 2005